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Protecting drinking water in Central Georgia

The challenge...

The Borjomi area in Central Georgia is known for good drinking water, with the famous Borjomi mineral water springs and several other springs rising in the nearby volcanic formations of the Little Caucasus Mountains. The opening of the Baku-Tbilisi-Ceyhan oil pipeline in 2005, however, raised the question as to whether a potential leakage of the pipeline crossing the recharge area near Borjomi might affect the water supply to the city of Borjomi and the mineral springs.

The project...

The Georgian Government and the M. Nodia Institute of Geophysics of the Georgian Ministry of Science and Education launched this project with the IAEA's assistance to assess the origin and subsurface pathways of groundwater captured for the drinking water supply of the city of Borjomi in Central Georgia, and to evaluate the vulnerability of the Borjomi springs in case of a leak in the oil pipeline.

With expert assistance, fellowship training, the provision of laboratory and field equipment and the transfer of methodology, water monitoring and sampling campaigns were carried out, providing information on the isotopic and chemical composition of groundwater in springs and nearby rivers. The study showed that the drinking water springs are largely supplied by fresh groundwater which could be affected by potential contamination in the infiltration zone. The Borjomi mineral waters, on the other hand, are captured from deeper boreholes, and are recharged much earlier and in other areas. It is unlikely that these deep waters can be affected by pollution from the pipeline.



Oil pipeline sector in the recharge area of the Borjomi mineral and drinking water springs.

The impact...

The recharge area for Borjomi's drinking water has been found to be vulnerable, therefore recommendations have been made on improving the protection of the oil pipeline in the critical sectors of the infiltration zone, as well as a proposal for a contamination alarm system. The project demonstrated the usefulness of isotope techniques, complemented by other methods and applied with a thorough understanding of the principal geological features of the area. It was implemented through good collaboration between the principal Georgian counterparts (the Ministry of Science and Education and the Ministry of Environmental Protection and Natural Resources) and the local water managers.